FIG. 1

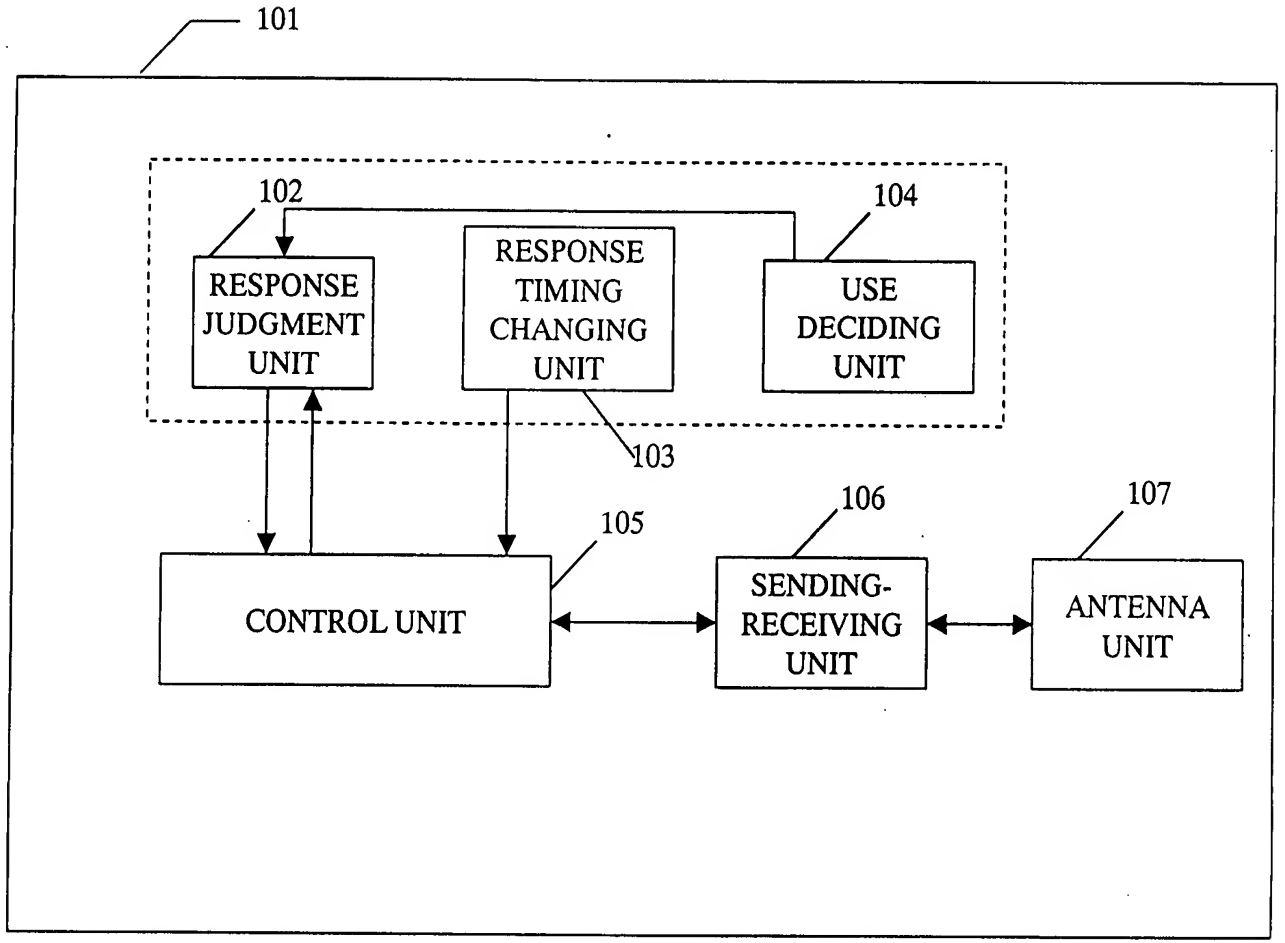

101
102
104
RESPONSE JUDGMENT UNIT
RESPONSE TIMING CHANGING UNIT
USE DECIDING UNIT
103
105
106
107
CONTROL UNIT
SENDING-RECEIVING UNIT
ANTENNA UNIT

FIG.2

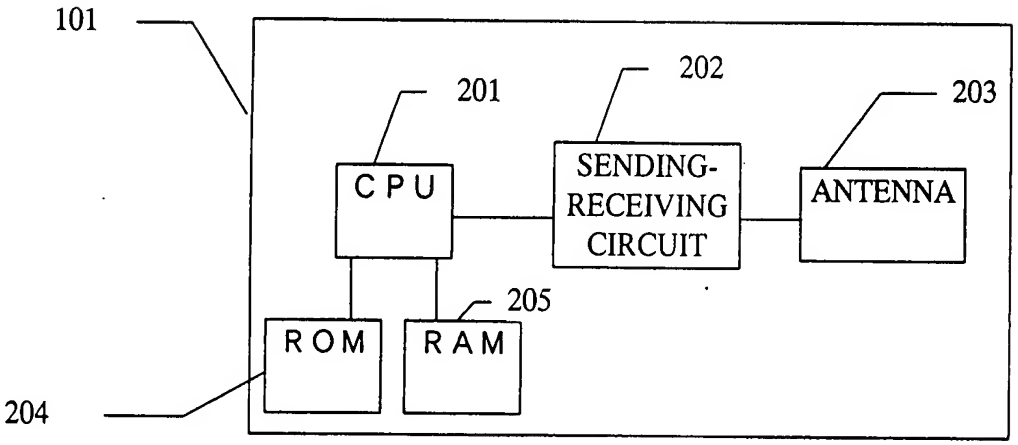

101
201
202
203
CPU
SENDING-
RECEIVING
CIRCUIT
ANTENNA
205
ROM
RAM
204

FIG.3

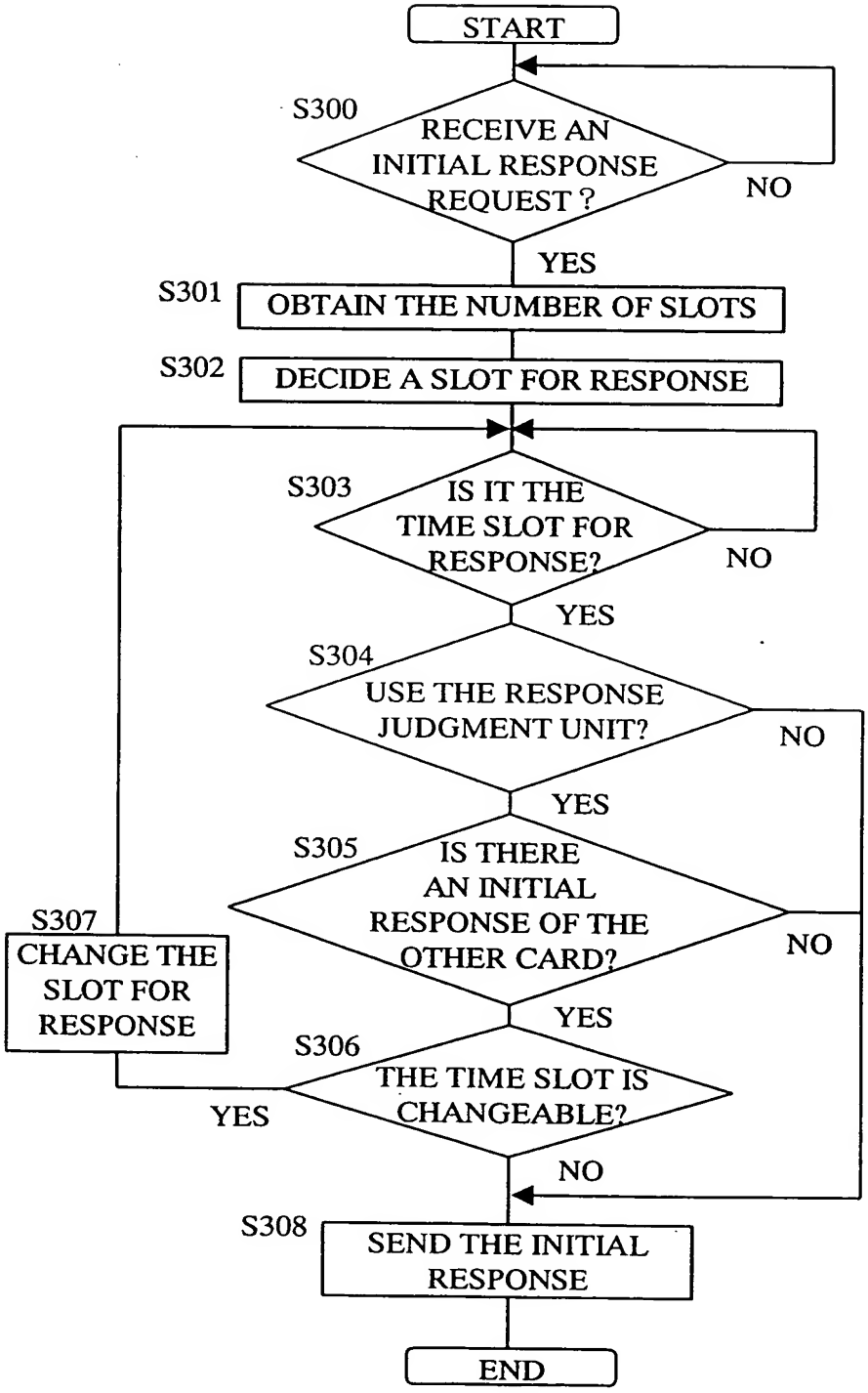

START
S300
RECEIVE AN INITIAL RESPONSE REQUEST ?
NO
YES
S301
OBTAIN THE NUMBER OF SLOTS
S302
DECIDE A SLOT FOR RESPONSE
S303
IS IT THE TIME SLOT FOR RESPONSE?
NO
YES
S304
USE THE RESPONSE JUDGMENT UNIT?
NO
YES
S305
IS THERE AN INITIAL RESPONSE OF THE OTHER CARD?
NO
YES
S306
THE TIME SLOT IS CHANGEABLE?
YES
S307
CHANGE THE SLOT FOR RESPONSE
NO
S308
SEND THE INITIAL RESPONSE
END

FIG.4

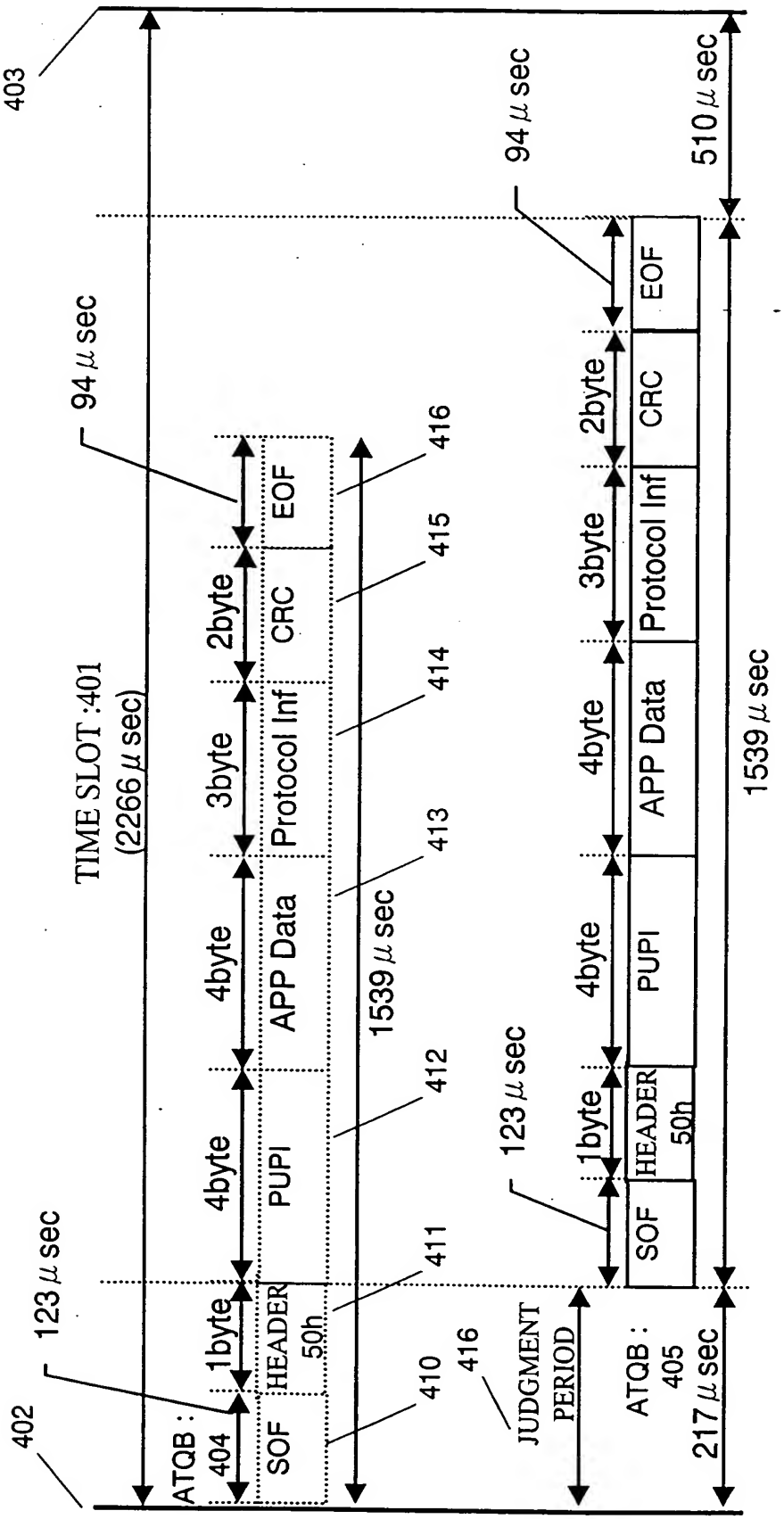

403
94 μ sec
510 μ sec
TIME SLOT :401
(2266 μ sec)
94 μ sec
416
415
414
413
412
411
410
123 μ sec
1539 μ sec
123 μ sec
1539 μ sec
1byte
4byte
4byte
3byte
2byte
1byte
4byte
4byte
3byte
2byte
HEADER 50h
PUPI
APP Data
Protocol Inf
CRC
EOF
SOF
HEADER 50h
PUPI
APP Data
Protocol Inf
CRC
EOF
402
ATQB : 404
JUDGMENT PERIOD
ATQB : 405
217 μ sec

FIG.5

		CONTACTLESS IC CARD 501	
		Slot1	Slot2
CONTACT LESS IC CARD 502	Slot1	×(1)	○(2)
	Slot2	○(3)	×(4)

×=COLLISION ○=NO COLLISION

FIG.6

			CONTACTLESS IC CARD 601			
			Slot1		Slot2	
			JUDGMENT	NO JUDGMENT	JUDGMENT	NO JUDGMENT
CONTACT LESS IC CARD 602	Slot1	JUDGMENT	×(1)	○(2)	○(3)	○(4)
		NO JUDGMENT	○(5)	×(6)	○(7)	○(8)
	Slot2	JUDGMENT	○(9)	○(10)	×(11)	×(12)
		NO JUDGMENT	○(13)	○(14)	×(15)	×(16)

×=COLLISION ○=NO COLLISION

FIG.7

		CONTACTLESS IC CARD 701			
		Slot1		Slot2	
		JUDGMENT ★	NO JUDGMENT	JUDGMENT ★	NO JUDGMENT
CONTACT LESS IC CARD 702	Slot1	○(1)	×(2)	○(3)	○(4)
	Slot2	○(5)	○(6)	×(7)	×(8)

×=COLLISION ○=NO COLLISION

FIG.8

		CONTACTLESS IC CARD 801			
		Slot1	Slot2	Slot3	Slot4
CONTACTLESS IC CARD 802	Slot1	×(1)	○(2)	○(3)	○(4)
	Slot2	○(5)	×(6)	○(7)	○(8)
	Slot3	○(9)	○(10)	×(11)	○(12)
	Slot4	○(13)	○(14)	○(15)	×(16)

×=COLLISION ○=NO COLLISION

FIG.9

			CONTACTLESS IC CARD 901							
			Slot1		Slot2		Slot3		Slot4	
			JUDGMENT	NO JUDGMENT	JUDGMENT	NO JUDGMENT	JUDGMENT	NO JUDGMENT	JUDGMENT	NO JUDGMENT
CONTACTLESS IC CARD 902	Slot1	JUDGMENT	×(1)	○(2)	○(3)	○(4)	○(5)	○(6)	○(7)	○(8)
		NO JUDGMENT	○(9)	×(10)	○(11)	○(12)	○(13)	○(14)	○(15)	○(16)
	Slot2	JUDGMENT	○(17)	○(18)	×(19)	○(20)	○(21)	○(22)	○(23)	○(24)
		NO JUDGMENT	○(25)	○(26)	○(27)	×(28)	○(29)	○(30)	○(31)	○(32)
	Slot3	JUDGMENT	○(33)	○(34)	○(35)	○(36)	×(37)	○(38)	○(39)	○(40)
		NO JUDGMENT	○(41)	○(42)	○(43)	○(44)	○(45)	×(46)	○(47)	○(48)
	Slot4	JUDGMENT	○(49)	○(50)	○(51)	○(52)	○(53)	○(54)	×(55)	×(56)
		NO JUDGMENT	○(57)	○(58)	○(59)	○(60)	○(61)	○(62)	×(63)	×(64)

×=COLLISION ○=NO COLLISION

FIG.10

		CONTACTLESS IC CARD 1001							
		Slot1		Slot2		Slot3		Slot4	
		JUDGMENT ★	NO JUDGMENT	JUDGMENT ★	NO JUDGMENT	JUDGMENT ★	NO JUDGMENT	JUDGMENT ★	NO JUDGMENT
CONTACTLESS IC CARD 1002	Slot 1	○(1)	×(2)	○(3)	○(4)	○(5)	○(6)	○(7)	○(8)
	Slot 2	○(9)	○(10)	○(11)	×(12)	○(13)	○(14)	○(15)	○(16)
	Slot 3	○(17)	○(18)	○(19)	○(20)	○(21)	×(22)	○(23)	○(24)
	Slot 4	○(25)	○(26)	○(27)	○(28)	○(29)	○(30)	×(31)	×(32)

×=COLLISION ○=NO COLLISION

FIG.11

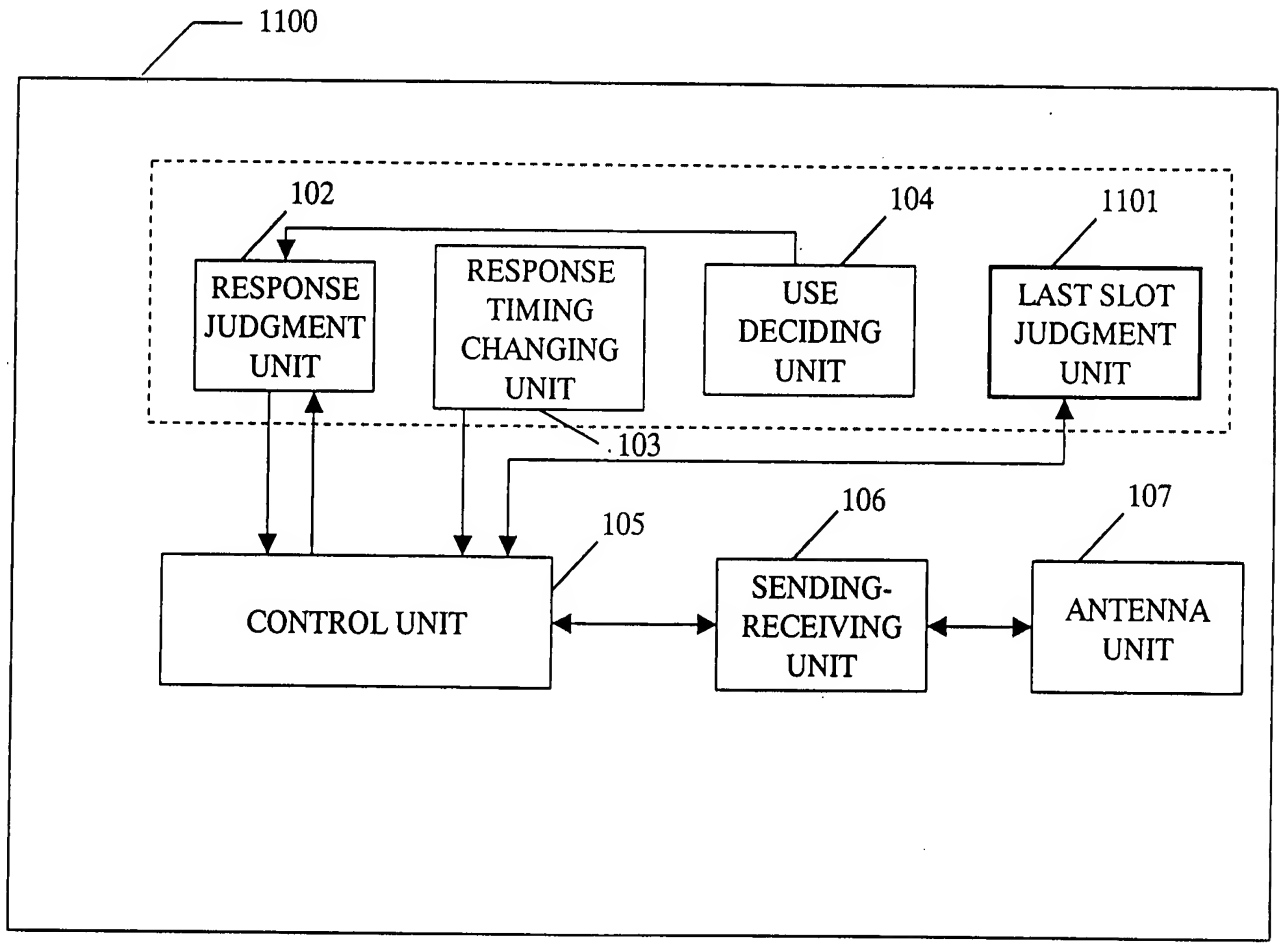

1100
102
104
1101
RESPONSE JUDGMENT UNIT
RESPONSE TIMING CHANGING UNIT
USE DECIDING UNIT
LAST SLOT JUDGMENT UNIT
103
105
106
107
CONTROL UNIT
SENDING-RECEIVING UNIT
ANTENNA UNIT

FIG.12

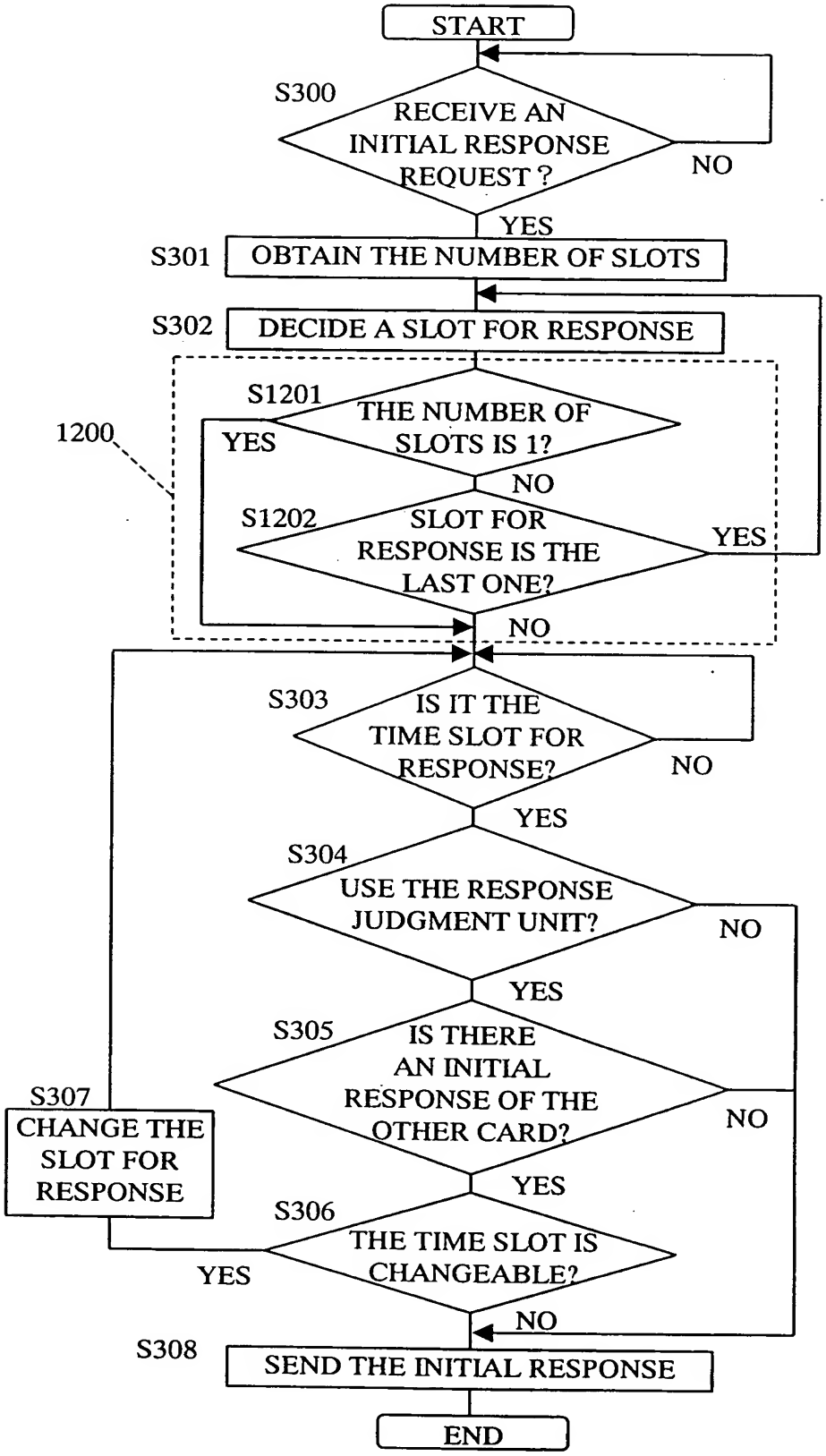

START
S300
RECEIVE AN INITIAL RESPONSE REQUEST ?
NO
YES
S301
OBTAIN THE NUMBER OF SLOTS
S302
DECIDE A SLOT FOR RESPONSE
1200
S1201
THE NUMBER OF SLOTS IS 1?
YES
NO
S1202
SLOT FOR RESPONSE IS THE LAST ONE?
YES
NO
S303
IS IT THE TIME SLOT FOR RESPONSE?
NO
YES
S304
USE THE RESPONSE JUDGMENT UNIT?
NO
YES
S305
IS THERE AN INITIAL RESPONSE OF THE OTHER CARD?
NO
YES
S307
CHANGE THE SLOT FOR RESPONSE
S306
THE TIME SLOT IS CHANGEABLE?
YES
NO
S308
SEND THE INITIAL RESPONSE
END

FIG.13

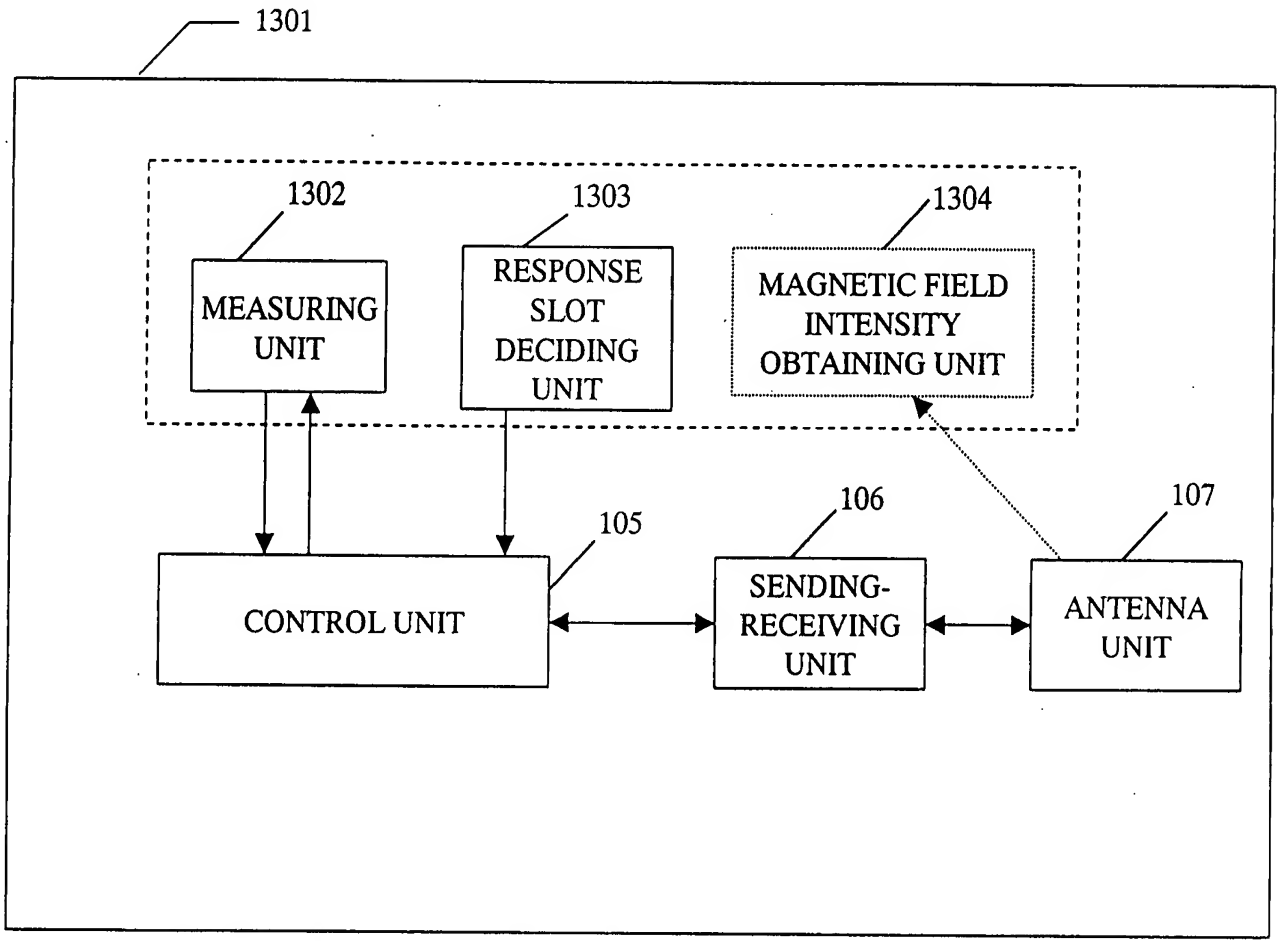

1301
1302
1303
1304
MEASURING UNIT
RESPONSE SLOT DECIDING UNIT
MAGNETIC FIELD INTENSITY OBTAINING UNIT
105
106
107
CONTROL UNIT
SENDING-RECEIVING UNIT
ANTENNA UNIT

FIG.14

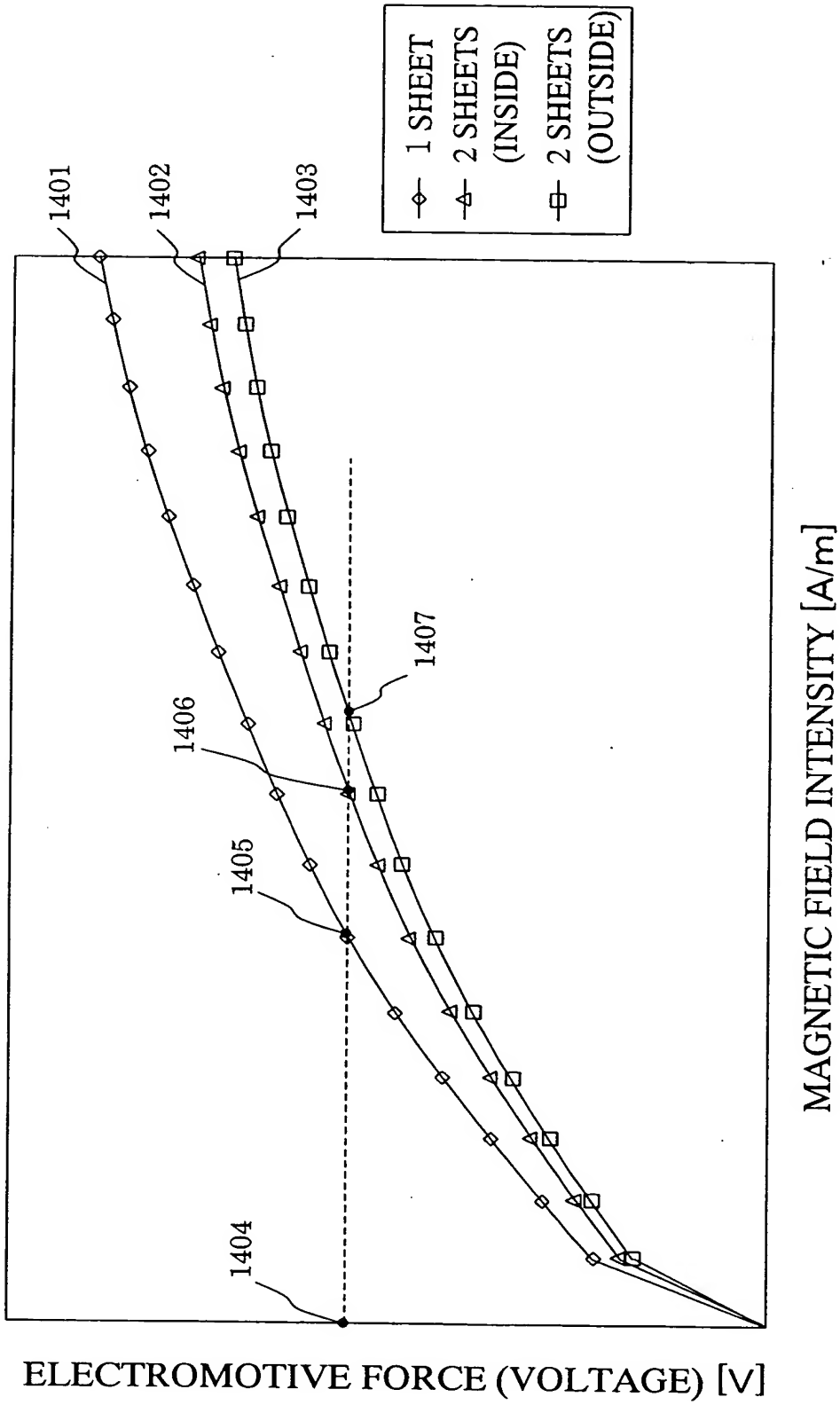

1 SHEET
2 SHEETS (INSIDE)
2 SHEETS (OUTSIDE)
1401
1402
1403
1404
1405
1406
1407
MAGNETIC FIELD INTENSITY [A/m]
ELECTROMOTIVE FORCE (VOLTAGE) [V]

FIG.15

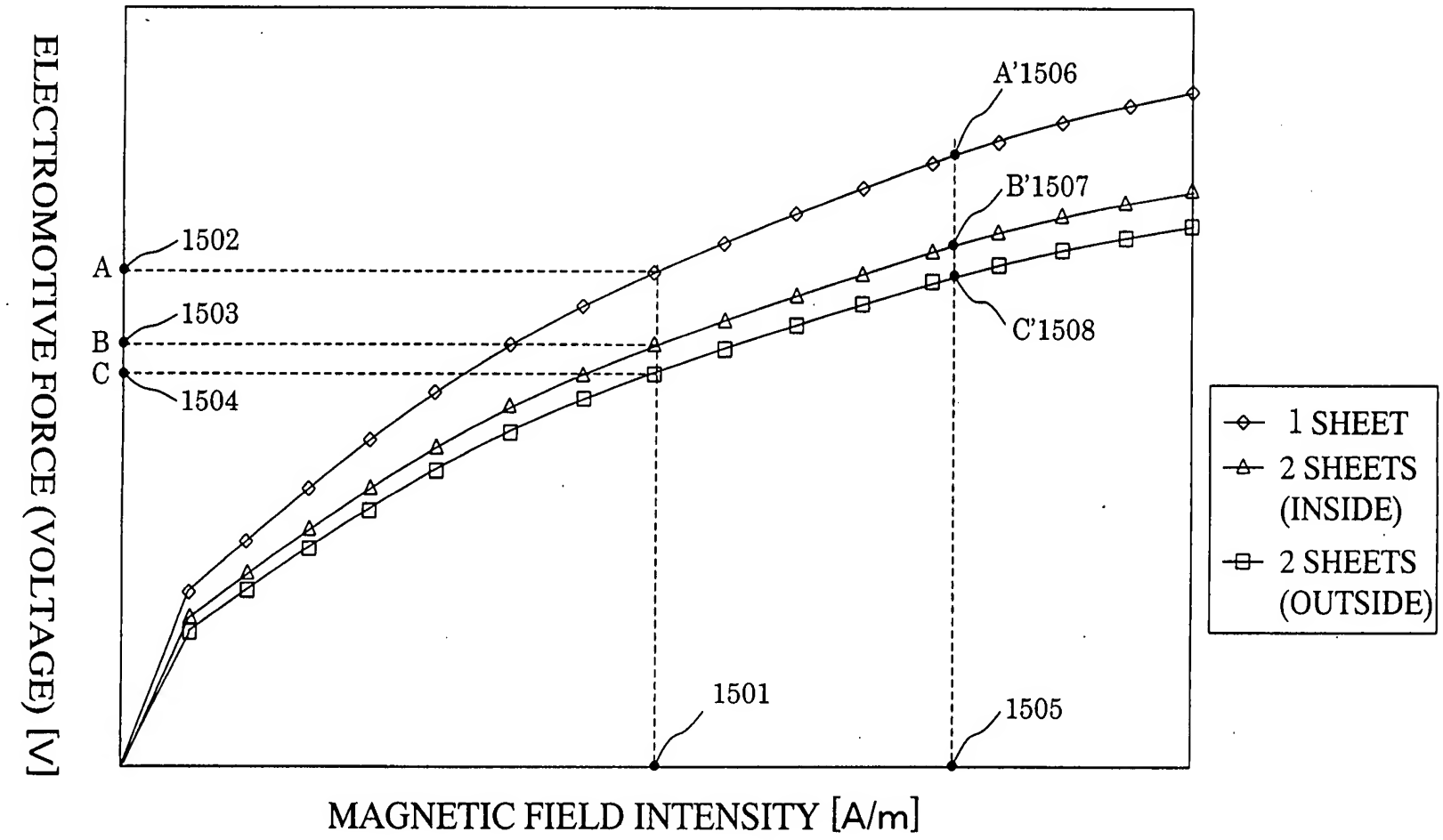

ELECTROMOTIVE FORCE (VOLTAGE) [V]
MAGNETIC FIELD INTENSITY [A/m]
A
B
C
1502
1503
1504
1501
1505
A'1506
B'1507
C'1508
1 SHEET
2 SHEETS (INSIDE)
2 SHEETS (OUTSIDE)

FIG.16 PRIOR ART

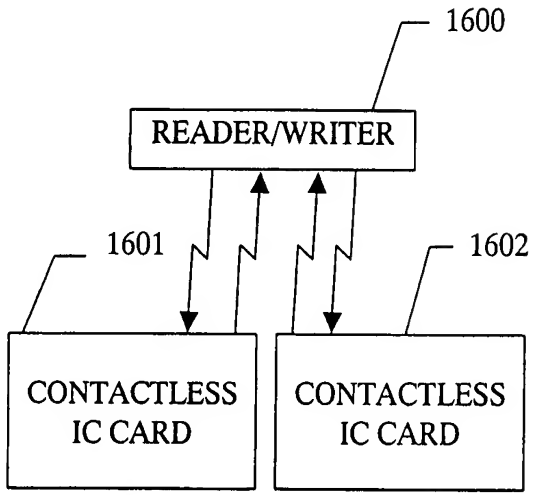


FIG.17 PRIOR ART

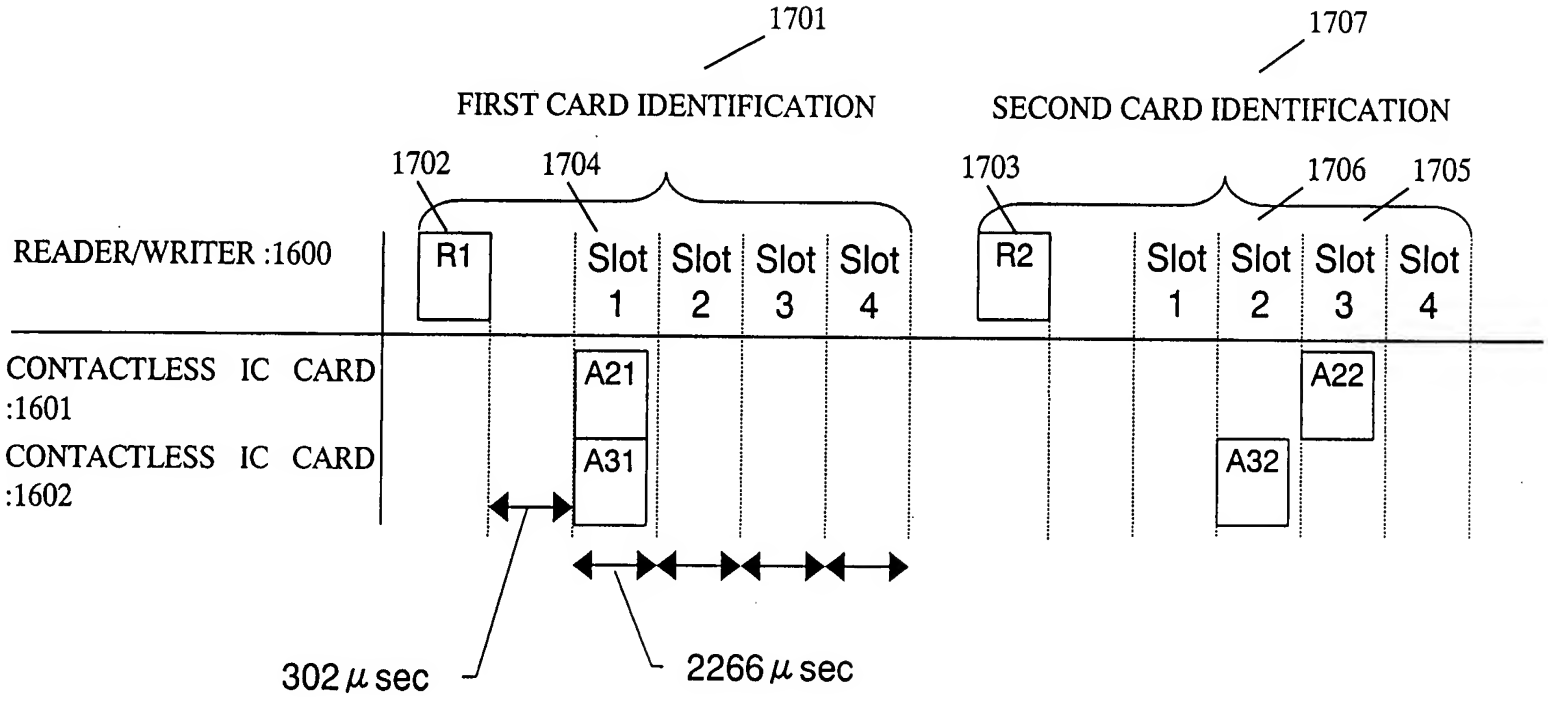
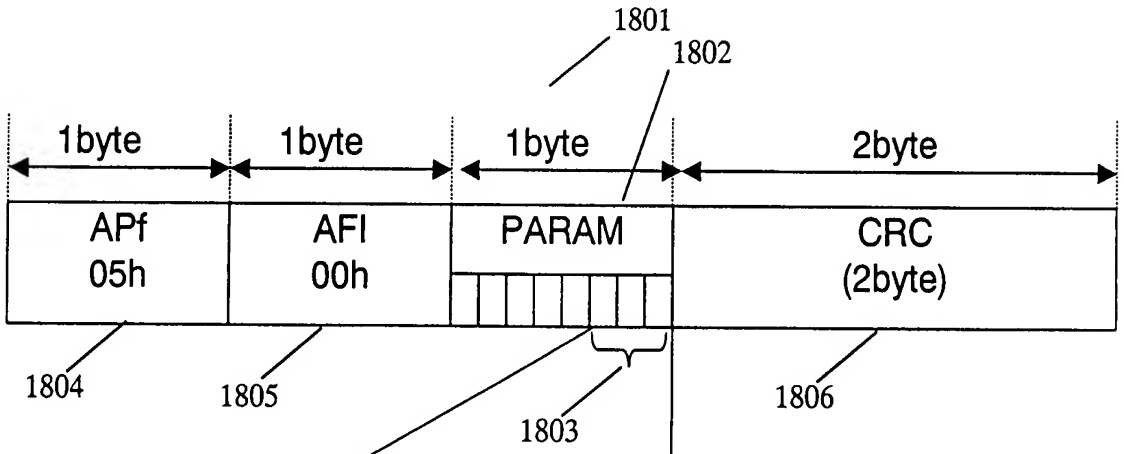


FIG.18 PRIOR ART



b3	b2	b1	
0	0	0	2 IS RAISED TO THE 0 POWER = 1
0	0	1	2 IS RAISED TO THE 1ST POWER = 2
0	1	0	2 IS RAISED TO THE 2ND POWER = 4
0	1	1	2 IS RAISED TO THE 3RD POWER = 8
1	0	0	2 IS RAISED TO THE 4TH POWER = 16
1	0	1	RESERVATION
1	1	0	RESERVATION
1	1	1	RESERVATION